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ARM Facilities Newsletter

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ARM Installs Aircraft Detection Radar System

For improved safety in and around the ARM SGP CART site, the ARM Program recently purchased and installed an aircraft detection radar system at the central facility near Lamont, Oklahoma. The new system will enhance safety measures already in place at the central facility.

The SGP CART site, especially the central facility, houses several instruments employing laser technology. These instruments are designed to be eye-safe and are not a hazard to personnel at the site or pilots of low-flying aircraft over the site. However, some of the specialized equipment brought to the central facility by visiting scientists during scheduled intensive observation periods (IOPs) might use higher-power laser beams that point skyward to make measurements of clouds or aerosols in the atmosphere. If these beams were to strike the eye of a person in an aircraft flying above the instrument, damage to the person's eyesight could result.

During IOPs, CART site personnel have obtained Federal Aviation Administration (FAA) approval to temporarily close the airspace directly over the central facility and keep aircraft from flying into the path of the instrument's laser beam. Information about the blocked airspace is easily transmitted to commercial aircraft, but that does not guarantee that the airspace remains completely plane-free. For this reason, during IOPs in which non-eye-safe lasers were in use in the past, ARM technicians watched for low-flying aircraft in and around the airspace over the central facility. If the technicians spotted such an aircraft, they would manually trigger a safety shutter to block the laser beam's path skyward until the plane had cleared the area.



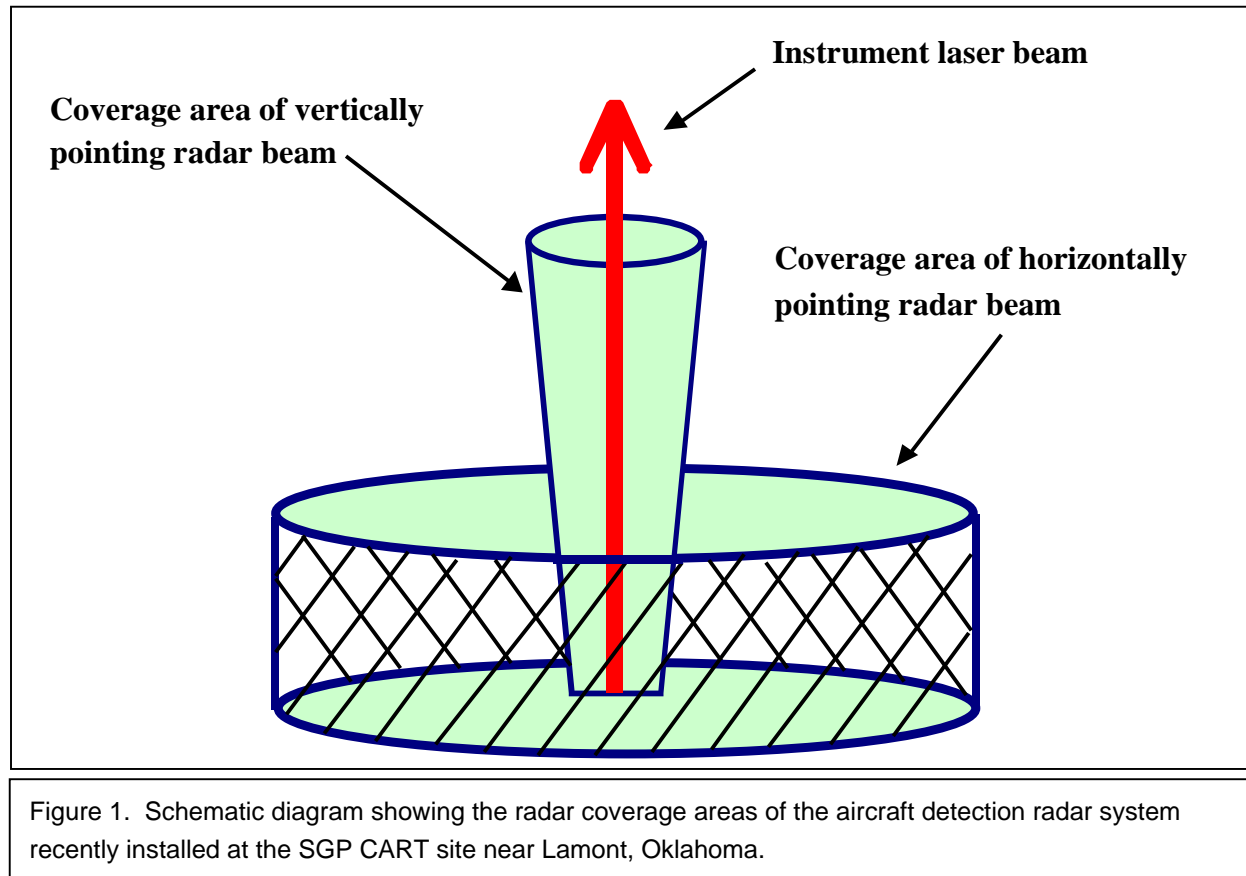
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Although the visual spotting of aircraft was necessary and generally adequate, it left room for human error, especially at night or during poor weather conditions. To improve safety, the ARM Program purchased the new radar system.

than a second of warning time for low-flying aircraft, a horizontally scanning radar is used to protect the lower altitudes from the ground to 20,000 feet. This second radar will have a horizontal range of about 36 miles. Both radars have audible alarms that will



The new radar system, like the ones used by the National Aeronautics and Space Administration (NASA) for its non-eye-safe lasers, consists of two commercially available radars built by Furuno Electric, a prominent manufacturer of marine radar systems. Such radars normally help commercial and private watercraft navigate coastlines and harbors. The first radar is a 2.2-kilowatt scanning radar that will be specially configured to point vertically along the path of an instrument's laser beam. The radar will be able to "see" to an altitude of 30,000 feet, the approximate height of most commercial jetliner traffic. Because the width of the vertically pointing radar beam is narrow near the ground and allows for less

alert technicians when aircraft are in the area and are approaching the laser beams. The alarms will allow sufficient lead time for the shutters on the lasers to be closed manually before a low-flying aircraft enters the area.

The radar system has been installed and tested, and it should be in use during the next IOP (scheduled for this fall). During IOPs, low-flying aircraft will still be restricted from the airspace over the central facility when skyward-pointing laser instrumentation is in use. For extra protection of pilots who might not have received word of the airspace closure, ARM has added the radar system to eliminate all possible dangers.